

THE BRITISH SOCIETY OF RHEOLOGY

BULLETIN



September 1994

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CONTENTS

Officers and Members of Council	i i
Editorial	53
Commentary: Council Meeting & 54th AGM	54
The New Council	56
Letter to the Editor	57
Officers' Reports to the AGM	59
Conference Report	67
Conference Announcements	69
Recently Published Books	72
Membership News	75



Hon. Editor
Mr P.C.Anderson,
32 Queensway,
Feltham,
Middlesex,
TW13 7NS

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THE BRITISH SOCIETY OF RHEOLOGY

OFFICERS AND MEMBERS OF COUNCIL. 1994/95

- President:** Prof H.A.Barnes, Unilever Research Ltd, Port Sunlight Laboratory,
Quarry Road East, Bebington, Wirral, Merseyside, L63 3JW
Tel: 051-471-3529
- Secretary:** Dr G.J.Brownsey, Institute of Food Research,
Norwich Research Park, Colney, Norwich, NR4 7UA
Tel: 0603-255201 Fax: 0603-507723 Telex: 975453 FRINOR G
- Treasurer:** Mr R.E.Carter, Polymer Laboratories Ltd, Jubilee Drive,
Belton Park, Loughborough, Leics, LE11 0XS
Tel: 0509-233300 Fax: 0509-234905 Telex: 341383
- Membership Secretary:** Dr N.E.Hudson, Dept of Pure & Applied Chemistry,
University of Strathclyde, 295 Cathedral Street, Glasgow, G1 1XL
Tel: 041-552-4400 Fax: 041-552-5664 Telex: 77472
- Abstracts Editor:** Dr G.H.Meeten, Schlumberger Cambridge Research Ltd,
P.O.Box 153, Madingley Road, Cambridge, CB3 0EL
Tel: 0223-325204 Fax: 0223-467004 Telex: 818872 SCHLUM G
- Bulletin Editor:** Mr P.C.Anderson, 32 Queensway, Feltham, Middlesex, TW13 7NS
Tel: 081-890-6586
- Ordinary Members:** Prof P.F.G.Banfill, School of Architecture & Building Engineering,
University of Liverpool, P.O.Box 147, Liverpool, L69 3BX,
Tel: 051-794-2619 Fax: 051-794-2605 Telex: 627095
- Dr R.Burley, Dept of Mechanical & Chemical Engineering,
Heriott-Watt University, Riccarton, Edinburgh, EH14 4AS
Tel: 031-449-5111 Fax: 031-451-3129
- Prof A.R.Davies, Dept of Mathematics, University of Wales,
Aberystwyth, Dyfed, SY23 3BZ
Tel: 0970-622755 Fax: 0970-622777 Telex: ABYUCW G
- Mr P.D.Doody, National Starch & Chemical Ltd,
Galvin Road, Slough, Berkshire, SL1 4DF
Tel: 0753-533494 Fax: 0753-577704
- Prof T. McLeish, IRC in Polymer Science & Technology,
University of Leeds, Leeds, W. Yorkshire, LS2 9JT
Tel: 0532-333845
- Mrs C.A.Moules, Camtel Sciences, 27 Alexander Road,
Stotfold, Hitchin, Herts, SG5 4NA
Tel: 0763-244280 Fax: 0763-244298



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EDITORIAL

Hardly a good start for a new Bulletin Editor, to be late issuing his first Bulletin - my apologies. It is going to be a very daunting task living up to the high standards set by my predecessor, Phil Banfill. By the way I must also add my congratulations to him on his appointment as Professor in the Department of Building Engineering and Surveying at the Heriott-Watt University. Whilst if Phil had any problems in producing the Bulletin, they lay in finding enough time during a busy working day to put it together and in bullying equally busy potential contributors, I can see my problems being slightly different. As someone who has taken early retirement from full time employment, I do not have the backup resources provided by a large work place - no secretaries, no business phones, no stationery cupboard, no photocopiers, no computer network and no large technical library on one's doorstep. So I will have to use what I do have, the extra time, to go further afield to find these things and I will need more help from you, our members, to provide me with the information that we need to continue to make this a successful and useful Bulletin.

So even if you don't have the time to write technical articles for us, we would appreciate letters to the Editor, reminiscences and most especially news of meetings, conferences and new books, both as forthcoming announcements and as reviews or reports of their success or otherwise. Please send me as much as you can, even if it is only a brief announcement of a forthcoming meeting and even if you think someone else may have told me; I would rather have duplication than no knowledge of an event. In particular, if you are producing a new book, please send us a review or a copy to have reviewed. Review copies are usually subsequently donated to the BSR Scott-Blair archive collection at Aberystwyth.

To return to one cause of the delay in putting this edition together, I had no suitable home computer on which to do so. I have now purchased an Apple Macintosh, so I would be very happy to receive contributions on 3.5" floppy discs (HD, 1.44mB, Mac or DOS and returnable if required, of course) to save me retyping everything. At this stage I have no modem and so am not electronically networked. What are your views on the 'electronic information super highway'? Should our publications be produced and made available this way? Is there already a rheological bulletin on some network somewhere? If you know of one or think it would be good idea to have one started, please write to us and start a discussion on the subject. Do you think it would make my job easier if I were to become networked?

As you will be aware, your Council has become very concerned over the future of the Rheology Abstracts in its present paper form. Do you all already do your own searches of the literature through remote computerised databases or is that the privileged position of only a few cognoscente who work in the bigger academic institutions and industrial concerns? If you do not agree that publications on paper should be consigned to the waste bin, please let us know your opinions.

As you will read elsewhere in this Bulletin (see Officers reports to the AGM), the formation of a European Society of Rheology has been proposed. The British Society intends to play a leading role in this greater cooperation within Europe, and in particular hopes that its Bulletin will contain more European coverage and will be more widely read throughout Europe. It has been suggested that for a start, a loose leaf insert with news of European events, be distributed with our Bulletin, and separately to members of all the other member Societies. It will be one of my endeavours, as your editor, to correspond with appropriate officers in these Societies to procure more news of their activities.

The copy date for the next Bulletin is December 30th 1994.

BACK COPIES OF THE BSR BULLETIN

Your Bulletin Editor holds a stock of copies of back numbers of the Bulletin covering the last 10 years. Beyond a reference set, older copies are discarded. If any member is missing any of these issues and sends him a stamped addressed envelope, he will attempt to replace the requested numbers.

COMMENTARY: COUNCIL MEETING & 54th AGM

At first sight it seemed a very strange venue. Our notices said we were meeting in the National Motor Cycle Museum. Were we to be standing by the exhibits surrounded by bikers? The Council meeting in September is always linked to the annual Autumn meeting at which the AGM is also held and is usually a very brief one. This year, because of the European conference in Seville, the Autumn conference was a one day event and was devoted to papers by young Rheologists (see separate report).

The venue was chosen as central and easily reached. Because Council members could also be attending the conference, our meeting was scheduled for a mere half hour slot before lunch whilst the delegates went on a tour of the Museum.

Eight Council members plus the President elect were present, there being four apologies from those members who were not standing for reelection due to pressure of work. As is usual, these quick meetings are devoted to checking that everything is in place for the AGM. Yes we did have nominations from willing and able candidates for all officers and councillors positions - Whew! The officers reports to the AGM were quickly run through and agreed.

The awards the Society was giving this year were confirmed. The Gold Medal award to Prof. Marcel Crochet and the Annual Award to Gareth McKinley will both be presented at the International Workshop on Numerical Simulation in Rossett in N.Wales, next April. The special award to be made to Jack Roberts at the AGM was shown and much admired. This consisted of a mounted glass panel engraved with a line drawing of the Weissenberg Rheogoniometer, which Jack had been instrumental in developing.

The latest progress on the discussions, at Seville, on the formation of a European Society of Rheology were also reported. Ralph, our outgoing President, thanked all the officers for the excellent jobs that they had done and said how much he had enjoyed his two years as President.

And so after lunch to the AGM. Relief again as we did have a quorum and could proceed. Ralph presented the award to Jack Roberts and he expressed his gratitude in return. The officers presented their reports, which are to be found elsewhere in this Bulletin, and all were accepted. Council nominations matched the number of posts available, so all were accepted by the meeting en bloc, without the need for separate votes, there being no further nominations. The meeting closed with Nick Hudson proposing (seconded by Carole Moules) a vote of thanks to Ralph Oliver for all his good work as our President for the past two years. Behind the scenes there then followed the usual handovers as outgoing Officers passed over their boxes of accumulated paperwork. Signs of relief to heard all round.

Peter Anderson

YOUR NEW COUNCIL

Following the recent AGM, there have been extensive changes to the Council. Further to the comments made by Malcolm Mackley in his commentary on the June Council meeting, published last quarter, these notes confirm the changes that have been made. Only two of the twelve members retain the same roles as they had before the AGM. The majority of the changes came about under the very sensible rule that members cannot retain the same post for more than four years (two years in the case of the President). Prof Howard Barnes (Unilever Research) has taken over as President from Ralph Oliver. Geoff Brownsey, recently an ordinary member of Council and previously the very successful Editor of Rheology Abstracts, has taken over from the hard working Carole Moules as our Secretary. Carole remains on the Council as an ordinary member. Roy Carter and Gerry Meeten remain as Treasurer and Abstract Editor respectively. Nick Hudson takes over from Prof Doug Hourston as the Membership Secretary and, as the keeper of the membership list, he will also generate the mailing labels and deal with the distribution of our Bulletin. Doug Hourston has had to stand down from Council due to pressure of work following his appointment to a chair at Loughborough. I (Peter Anderson) have taken over from Phil Banfill (who is about to become a Professor at Heriott-Watt) as the Editor of this Bulletin. Phil's will be a hard act to follow. I have previously held the posts of Membership Secretary (1984-1987) and Treasurer (1990-1993) and found myself having my arm twisted once again. Phil will be remaining on Council as an ordinary member.

The remaining four places as ordinary members on Council have been filled by new faces (at least to Council), following the stepping down of Malcolm Mackley, Peter Townsend and Neville Waters. Peter in particular found that his new duties as Vice - Chancellor at the University of Wales, Swansea did not leave him sufficient time to continue on Council. The new members of Council are Dr Roger Burley of Heriott-Watt University, Edinburgh, Prof Russell Davies of the University of Wales in Aberystwyth, Dr Paul Doody of National Starch, Slough and Prof Tom McLeish of the University of Leeds. We look forward to working with them and wish them well on Council. Our thanks are due to all those who will no longer be with us on Council.

Editor

LETTER TO THE EDITOR

2, Chessington Close,
West Ewell, Surrey

or more often:
S.Pancrace, Oraison,
04-700, France

Dear Sir,

In reference to the recent suggestions by Carole Moules regarding "Rheological Qualifications" (NVQ's); in particular to her second explanatory note.

This suggestion is by no means new. If I remember correctly, a similar proposal was mentioned in connection with Twente University, The Netherlands, fourteen or more years ago. I also seem to recall reports of such qualifications awarded in other places around that time. I cannot confirm either case other than to say that the information, if such it was, emerged during several years ad hoc discussions in which I advocated an introductory scheme at, or before, "A" level educational standard, where tomorrow's scientists and technologists are to be found.

But it seemed that such qualifications that were, or were to be awarded, were in fact in the form of a Diploma, rather than a full blown degree. The reasoning being that rheology was recognised as an advanced technological aid to scientific investigation. Wherefore the real scientific expertise must be that of the Chemist, Physicist, Pharmacist etc, whose task it becomes to analyse the data obtained from the rheometer in terms meaningful to his, or her, particular discipline.

However it should be acknowledged that rheology, in company with, and largely as a result of rheometry, is a far different activity than it was when Bingham invented the name, (1929). Or even than it was in the 1950's when Scott-Blair was limited to a home made contraption of mechanical springs and dash pots with which to demonstrate his 'Visco-Elasticity' theories. In fact, a very practical demonstration, but rather overshadowed by his habit of talking very rapidly over his shoulder, as he filled a large blackboard with mathematical detail at a rate that left many of his audience somewhat bemused.

But since that period, rheometry has advanced so far that the theories, and half formed ideas of Bingham, Scott-Blair and the many other 'names', are now open to practical investigation. Provided always that the experimenter has sufficient competence to get the best out of the now very advanced instrument. From my experience, which admittedly ended some years back, a not too common achievement.

Therefore for this branch of science and/or technology, some form of qualified training can only be beneficial. Moreover the BSR should certainly be involved. Just what form any resulting qualification should take, and how it should be awarded is a matter for discussion. I would suggest a Diploma in Rheological Competence.

However I suspect that some instrument manufacturers, who already provide their own comprehensive, and if required, specialised training programme, may be a little unwilling to offer their cooperation. Especially so since this explanatory note to which I refer, has in places a distinctly commercial flavour which may not appear as unbiased as is suggested. But the unquestioned, even if self confessed, talents of the author (C.M.) could well be employed to advantage in an attempt to co-ordinate the various existing company schemes under the umbrella of, and authenticated by the BSR. In addition, the manufacturers may be quite willing to support a possibly lucrative free-lance "A" level scheme, as suggested earlier, as an initial step towards such reorganisation.

J.J.Deer

HAAKE ROTOVISCO RV3 VISCOMETER

I would be interested to know whether anyone has a working viscometer of the above type which they no longer use. My drive unit (the upper part containing the motor) has failed and replacement parts are difficult to find. Any help would be welcome.

Dr D.R.Oliver,
School of Chemical Engineering
Birmingham University
Edgbaston
Birmingham
B15 2TT

Phone 021 414 5310

OFFICER'S REPORTS TO THE 54th AGM

PRESIDENT

My term of office is now complete and the time has passed rapidly. I do think that two years is perhaps a little too short when other officers serve for four years.

We have continued in our major activities of running two publications, organising conferences, giving grants and awards and supporting student travel to conferences. The present meeting follows from this support; it is the first time that we have held a "young Rheologists" meeting and could possibly become a regular part of our Autumn meetings. We have held two most successful meetings at Cambridge, first in Sidney Sussex and then Robinson colleges, and our thanks are due to the deft organising touch of Malcolm Mackley. The former meeting was held jointly with the Groupe Francais Rheologie and the second with the Dutch Society of Rheology. Some leading rheologists from other countries also attended. The success of future Autumn meetings may depend on such cooperation, or perhaps on the quality of invited speakers.

The BSR has recently taken a leading role in the establishment of a European Society of Rheology. The Committee of European Delegates to the ICR voted at Seville (7.9.94) to form such a Society and also set up a Founding Committee, the Presidents of the British, German, French Russian and Belgian Societies of Rheology. This group will report their plans to the member societies within the next six months, for comment and approval. The objects of the new Society will be to promote Rheology from a European point of view, via a Bulletin (or Newsletter) and other publication, to organise the European Conference and provide additional information regarding joint meetings, to assist in the raising of funds from the European Community and to promote the educational aspects of Rheology. This major new initiative will not change the operation of existing Societies nor impose a significant financial burden.

I am pleased to announce that a Gold Medal will be presented in 1995 to Professor Marcel Crochet, of the Catholic University of Louvain, Belgium. Our Annual Award is to be presented to Professor Gareth McKinley, of Harvard University and, of course, we are currently making a special award to Jack Roberts for his pioneering work on the Rheogoniometer.

I wish to thank Carole for her hard, painstaking work as Secretary, for her invaluable support and also for the organisation of the present meeting. Roy Carter (Treasurer) and Gerry Meeten (Abstracts) now have their "feet under the table" and are performing two of the most important jobs in the Society. Phil Banfill has completed his term as Bulletin Editor and is to be complimented on producing one of the finest examples of this type of publication I know. Peter Townsend and Malcolm Mackley are retiring from the Council, we hope temporarily, and are to be thanked for work on the Bulletin and on conference organisation respectively.

The BSR retains its friendly "club" image and, under its new President, Howard Barnes, will continue to move ahead and forge new links in Europe and elsewhere. I wish the Society "good luck" in the future.

D.R.OLIVER

SECRETARY

Now that my four year term of office is complete, I can look back with some sense of achievement at lasting the course. For anyone considering election to Council I have a word of caution, 'to do the job properly takes a great deal of time'. I have been fortunate in acting with one of the hardest working groups of Council Officers that I have known. The enthusiasm for the job will stand their fellows in good stead. The members of Council have supported us and hopefully the membership has benefited from the updated Membership list, interesting Bulletins, increased Abstracts, varied conferences and short meetings and increasing communications to students who are receiving financial support.

This is not to denigrate past Council members because without their efforts, advice and experience, these 'jobs' would not achieve the current success

During the past year I have been active as the BSR representative to the meetings looking to extend more widely national vocational standards to the science, technology and mathematics field. This initiative has been funded by the government through the DOE. A separate section highlights the BSR involvement to date. I have also represented the Society on an NPL initiative which takes the form of a multi-client co-operative looking into the measurement methods relating to the processing of plastics.

One of the most important ideas this year has been to form a European Rheology Body (Society) which the British have been asked to lead. Although I was involved in arranging an exploratory meeting during the Seville Conference, personal reasons prevented me from attending. Our President has covered this meeting in his report. I hope a body is formed to benefit all people interested in pure and applied rheology, whether in academia or industry and that the BSR uses its perceived role as the most respected Society in Europe to guide this body in fulfilling mutually beneficial aims and objectives.

Our Conferences

Following the highly regarded 'Theoretical' Meeting last September with the Dutch Society, we have been involved in a one day meeting on 'Rheology and Water Soluble Polymers' with the British Association of Chemists (BACS) in April. A new idea has led to this September's 'Young Rheologists' Day' which, from the response of potential speakers, I would suggest, should be included annually in the normally longer AGM conference.

N.B. The timing of the European Conference in Seville earlier this month, which we felt would attract many of our members, was the reason for our much shorter meeting this year.

On a personal note, I was disappointed to see such a small number of BSR delegates at this April's and September's meetings. Our conclusion is that we are not identifying the needs of our members when selecting Conferences. Is it content, timing, venue, financial, or are they just not wanted? I would love to stimulate a response from our members or has apathy set in?

Summary of BSR Actions 1993/94

We started the year with two working groups dealing with:-

- 1) A proposed handbook of Rheology possibly named 'Rheology A to Z'.
- 2) Scott-Blair Collection

The first, under the chairmanship of David Cheng, set out a proposed plan and cost for continuing this idea. due to increased costs to the BSR (~£4,000) I was asked to discuss with David if alternative methods could be found

which would be financially less demanding to the Society. (I must stress that no one appeared to be gaining financially unless it was the publishers). David has sent a report to the Council suggesting that the working Working Party be wound up and that he is set free to pursue the proposal independently from the BSR.

The Scott-Blair Collection Group hold regular meetings to oversee the Library. The Bulletin will continue to update members of new acquisitions.

The Society Archivist works closely with the Council and the Scott-Blair Collection Group to ensure that the Society's important records, papers, etc. are listed and stored and irrelevant 'litter' disposed of. I was very pleased to be the first in the queue to have the Secretary's inherited collection of boxes sorted and irrelevant hoardings of past Secretaries removed from my office. Other officers are now benefiting from John Benbow's sensible approach.

Student Grants

The following have been awarded grants during the past financial year:-

B.S.Evans - post graduate at the Advanced Manufacturing and Automation Research Centre, University of Bristol to attend the Nordic Rheology Society's meeting in Copenhagen, June 1994. Poster presentation.

Miss M.A.Odriozola, Ph.D student at University of To attend the European Rheology Conference in Seville - September 1994. Her report on this meeting is published elsewhere in this Bulletin.

R.Greenwood, Ph.D student from the Chemical Engineering Dept., Imperial College to present a paper at the 68th Colloid & Surface Science Symposium at Stanford University, California, June 1994.

R.W.Roberts, University of Wales to attend 3rd International Conference on Composites in Galway.

National Vocational Qualifications

Following a government sponsored mapping project carried out by CSTI, an exploratory meeting was held on 23 September 1993 to discuss the establishment of occupational standards and qualifications in science, technology and mathematics.

The meeting was convened by a DOE appointed company under the chairmanship of Sir Norman Lindop and attended by representatives of three groups (industry, professional bodies and educational establishments).

Following further meetings, an Executive Council of a national body (ST+M) was formed to research further the situation at present, gaps in the system, possible formation of a new lead body or liaison with established lead bodies. The Council was weighted towards industry and the ratio of industry to professional bodies to educational establishments was 6:3:3. A legal company was to be formed which would employ staff as required. Interested groups could become members of the ST+M at nominal cost.

I suggested that the BSR might be interested in playing a part in laying down occupational standards in rheology and rheometry. I arranged a meeting with the DOE consultant, our President elect (Prof Barnes - industry based), Dr Cheng and three representatives from industrial companies (Schlumberger, Coates Lorilleux and the Body Shop). The potential Director of ST+M asked to join in. The meeting was held at Schlumberger Research, Cambridge in May.

The outcome is that the new Executive Council might use our area to run a mapping project identifying the number of people in industry whose work is totally, partly or indirectly affected by the use of rheology and rheometry. The BSR has been asked to help provide this information and I am awaiting feedback from the first meeting of ST&M regarding any decision to use our field of science as one of the first to look at the need for occupational standards.

I have written a couple of articles regarding NVQ's in the past two Bulletins, and have received a small amount of feedback. As more information becomes available it will be passed to Council for action.

A final comment on NVQ's. The government and opposition parties are backing these qualifications. Many major companies are enrolling their staff for NVQ's and they will become a part of a person's CV. I have seen an element at Level 3 in one standard which I found incomprehensible (it reminded me of legal speak). To ensure qualifications in rheology and rheometry do not go the same way, there must be a close partnership between industry and the experts to ensure the standards are written in terms both the candidates and assessors can understand, in order to test the knowledge and skill of the candidates.

Conclusion

To end on a controversial note I would question the lack of response from the membership. It is your Society and the Council should be carrying out your wishes. Too often I think the Council has to generate an idea, act on it and complete or discard it, e.g. the working party into transparency in rheometry and computer software failed in its objectives to get information from instrument manufacturers. Council did not receive comments from members. Is it because operators are satisfied or because they are not members of BSR?

It can be construed that that no comments mean you are all happy, but if that was the case I would assume more and more people would want to join an active and successful club, yet membership numbers are fairly static. There are various organisations which hold meetings that are better attended than ours and whose members seem more vibrant, e.g. BACS and the Non-Newtonian Club. I have noticed that these meetings have a much larger industrial representation as well as the recognised academics. Another Council member has commented on the failure to attract some of our recognised rheology experts to our meetings over the past few years.

Should we be setting up a working party to review the position of the BSR? Are you satisfied with the function of the BSR? What are its strengths and weaknesses? If we are going to lead a European Society, what should we be doing to ensure its aims and objectives are beneficial to the needs of a very diverse group of people whose interest in rheology and rheometry is equally varied?

These are serious questions which are purely personal but they are voiced in order to get a response. If the BSR Council is doing a good job, it would be nice to hear it from many more members. If you are completely satisfied and require no changes or if you have any ideas for the future, please let us know now.

Finally I would like to thank all those who have supported me in my work as Secretary of the BSR. It has been for the most part a very enjoyable and rewarding experience.

Carole MOULES

TREASURER

I regret that Audited Accounts are not yet available for the year 1993/94. The following comments apply to the provisional accounts. The audited accounts will be published in the Bulletin as soon as they are available.

The draft accounts show a deficit for the year of £2,907 on the year, compared with a profit of £3,950 in the previous year. This difference is primarily due to the late receipt, after the end of the financial year, of royalties amounting to £6,405 from the publishers of the Abstracts.

Slight increases were recorded in the income from Membership Subscriptions, Bulletin advertising and Bulletin subscriptions. However income from Conferences was less than half that in the previous year. Additionally, the lower rates of interest on deposit accounts operated to our detriment.

Council awarded significantly more Awards and Student Grants in the year, a total of £2,509, compared to £597 in the previous year. It is to be hoped that this level of beneficence is maintained.

I have been very disappointed with the service that we have received from our bankers at Lloyd's Bank in Leatherhead. I have been caused much inconvenience by wrongful debiting of our accounts. Indeed it is largely due to an error of Lloyd's in charging a cheque from the Cambridge conference account to the Membership account, putting this account into overdraft and then charging interest and activity fees, that I have not yet submitted the accounts for Audit. I have, with Council's approval, closed the Leatherhead accounts and transferred them to Loughborough.

The new current accounts are "Treasurer' Accounts" which will yield a modest amount of interest on our routine operations. Additionally I am instituting changes in procedures to allow me to monitor more immediately, subsidiary accounts such as Membership and Conferences in order to allow problems to be handled more efficiently.

In summary, the financial state of the Society remains healthy, with assets of over £45,000. However, Council will need to keep a wary eye on future expenditure in relation to potentially diminishing sources of income. In the coming year, I intend to review the actual cost of services provided by the Society with a view to recommending changes in our pricing policies.

R.E.CARTER

MEMBERSHIP SECRETARY

Please accept my apologies for my absence from the AGM. Due to pressure of work, I am now standing down from Council. I have greatly enjoyed my time on Council, particularly the last four years as Hon. Membership Secretary. I wish my successor 'all the best' in the position.

Statistics

Membership Information

Total membership	UK	Overseas
611 (595)	425 (415)	186 (179)

Members Joining During the Year 1993-1994

Total	UK	Overseas
38 (59)	25 (43)	13 (16)

Resignations During the Year 1993-1994

Total
22 (17)

() indicates the 1992-1993 figure.

D.J.HOURSTON

Haake (UK) present their high quality range of viscometers and rheometers

HAAKE

RS 100

A state of the art controlled Stress Rheometer to determine viscosity over a wide range of shear rates and elasticity using creep and oscillation techniques.



VT 500

This robust but precise viscometer is ideally suited for Viscosity measurement in demanding Quality Control environments. The instrument may be stand alone or computerised.



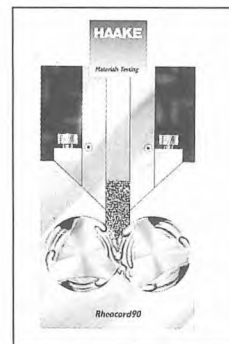
RV 20

A high quality speed-controlled Rheometer for research and development viscosity applications. There are measuring geometries to cover a wide range of shear rates and temperatures.



RC 90

This specialist torque rheometer is designed to meet the challenging requirements of polymer processability testing using a variety of mixers, extruders and accessories.



Haake (UK) Sussex Manor Park, Gatwick Road,
Crawley, Sussex RH10 2QQ

TEL: 0293-561323
FAX: 0293-516823

CONFERENCE REPORT

FOURTH EUROPEAN CONFERENCE ON RHEOLOGY

Seville, 4-9th September 1994

The fourth European Conference on Rheology was held in Seville (Spain) at the hotel "Melia Lebreros" between the 4th and 9th of September. Twenty three European countries were represented by more than three hundred delegates and students at this conference. Delegates and students from America, Oceania and Asia were also present.

Sessions started on Monday 5th with one plenary lecture given by Prof. Giesekus about the linear theory of viscoelasticity, followed by another on the molecular modelling of non-linearities in polymer rheology by Prof. Marucci. Furthermore, several keynote lectures were given during the Conference and four parallel sections took place at each session. Some time was devoted to Poster sessions, where we had the opportunity to look around and discuss several contributions.

First day presentations finished at 18:35 h and were followed by a visit to the wonderful "Los Reales Alcazares" Palace and a reception in its gardens, which included a welcome speech by the Lord Mayor of Seville. The visit ended at 20:30 h and was extremely enjoyable!!!, when you take into account that temperatures during the day were above 35°C!!!

Tuesday was very busy, with sessions starting at 8:30 h in the morning and finishing at 18:35 h in the evening. During these first two days, papers corresponding to the following subjects were presented: 1) Constitutive Equations, Theory and Molecular Theories; 2) Suspensions; 3) Food Rheology; 4) Surfactants; 5) Foams and Emulsions; 6) Rheometry and Experimental Methods.

Wednesday was more relaxed, with sessions finishing at 16:20 h. A trip to "Jerez" was organised for the delegates and all of them agreed that it was a wonderful evening, with a show at "The Royal Andalusian School of Equestrian Art" and a visit to "Gonzalez-Byass Bodega" including wine tasting, a "Goyesca" dinner at "Los Apostoles" salon of the above mentioned bodega and a Spanish classical ballet show. Also, on arriving back, the pre-selection of "Miss Andalucia" was taking place in the gardens of the hotel. In fact, one delegate decided to become a journalist for the night !!!

Anyway, many delegates were absent from the following morning's presentations. Thursday was another busy day, similar to Tuesday. Papers presented during Wednesday and Thursday referred to the following areas of work:

1) Rheometry and Experimental Methods; 2) Industrial Rheology; 3) Polymer Melts and Polymer Processing; 4) Biorheology; 5) Composites and Blends; 6) Foams and Emulsions; 7) Electro and Magneto rheology; 8) Liquid Crystals; 9) Numerical Simulation; 10) Suspensions and 11) Polymer Solutions. The Conference Dinner was served in the gardens of the Hotel at 21:00 h and a "Flamenco" exhibition was performed.

Friday was the last day and papers about Numerical Simulation, Liquid Crystals, Polymer Solutions and Solids were presented. The Closing of the Conference took place at midday and some people left Seville to go home directly. However others stayed in Andalucia to travel around the Country.

For a student like myself, this Conference was a great opportunity to meet people who are researching, not only in my area of work, but in other areas. It is impossible to attend all the sessions in these big conferences, but you have the choice to attend the subjects that you are really interested in. So, I would like to thank the Organising Committee for the excellent and difficult work carried out and for all the facilities procured. Also I would like to thank the BSR for the travel grant which allowed me to attend this Conference.

Maria Aranzazu Odriozola
Department of Pure and Applied Chemistry
University of Strathclyde
295 Cathedral Street
Glasgow, G1 1XL
Scotland

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CONFERENCE ANNOUNCEMENTS

THE ROLE OF NON-NEWTONIAN FLUID MECHANICS
IN POLYMER PROCESSING

Presented by An International Group on Polymer Rheology and Processing
Mountain Lake, Virginia
June 4-9th, 1995

The purpose of this course is to present an overview of non-Newtonian fluid mechanics and its role in the processing of polymeric and other complex fluids. Although the emphasis is on polymer melts and suspensions, the lecture material is directly applicable to the processing of foods, cosmetics, paints and other materials. The course is intended for chemical, mechanical, and materials engineers, applied mathematicians, and other scientists with some basic knowledge of fluid mechanics and heat transfer. It is intended to meet the needs of those who are already working in the field but need an update on the status of the field and those who are entering the field for the first time but need to know where to start and what the latest approaches are.

The course is intended to not only provide the attendee with the latest knowledge of the theory but experimental techniques also. It contains a unique aspect in that in addition to lectures, there will be a session devoted to the demonstration of various rheometers, processing facilities, and the latest numerical software (Polyflow). On completion of the course it is expected that the attendee will not only be in a position to understand the literature in the field, but will have a better perspective of the physical aspects associated with the processing of non-Newtonian fluids.

The course will be taught by the following team of specialists:

Donald G. Baird	Virginia Polytechnic Inst. and State University
David V. Boger	University of Melbourne
Marcel J. Crochet	Université Catholique de Louvain
Guisepppe Marucci	University of Naples
Ken Walters	University of Wales, Aberystwyth

The course will be held at Mountain Lake Hotel, Mountain Lake, Virginia in the Appalachian mountains. The course has been organised so that the afternoons are free to take advantage of the many recreational activities that are available. The course fee is \$1100 and further information is obtainable from:

Prof. Donald G. Baird,
Dept of Chemical Engineering,
Virginia Polytechnic Institute and State University,
Blacksburg, Virginia 24061-0211, Tel: 703 231 5998 Fax: 703 231 5022

CONFERENCE DIARY

DATE	PLACE	DETAILS
15/11/94	London, UK	'Everything Really Does Flow', Howard Barnes, Colloid & Surface Chemistry Group, Belgrave Square. Contact: Dr T. Cosgrove, Tel: 0272 303686 Fax: 0272 250612
15/2/95	Harwell, UK.	'On-Line Slurry Instrumentation Seminar', Contact: Mrs M. McCulloch, AEA Technology, Harwell, Oxfordshire
27-29/3/95	Guildford, U.K.	'Deformation and Fracture of Composites', 3rd Int. Conf. Contact: Institute of Materials, Conf. Dept., 1 Carlton House Terrace, London, SW1Y 5DB, UK Fax: (+44) 71 823 1638
29-31/3/95	Bristol, UK	'Concentrated Dispersions', Contact: Dr A. Lips, Unilever Research, Colworth Laboratory, Sharnbrook, Bedford, MK44 1LQ
4-7/4/95	Lancaster, UK	'Multi-phase Materials Prepared by Emulsion Polymerisation', Contact: Ms L. Edwards, Conference Officer, Bailrigg, Lancaster, LA1 4YT
19-22/4/95	Rossett, Wales	'Ninth International Workshop on Numerical Methods in Non-Newtonian Flows', Contact: Dr T.N. Phillips, Dept. of Mathematics, University of Wales Aberystwyth, SY23 3BZ
April 1995	Cirencester, UK	International Bohlin Users Meeting on Rheology. Contact: Caroline Waters, Bohlin Instruments Ltd, 5 Love Lane, Cirencester, Glos., GL7 1YG Tel: 01285 644407, Fax: 01285 644314

Travel grants are available to help students attend any of these meetings.

30/5-2/6/95	Ross Priory, Scotland	Short Course: 'Theoretical, Experimental and Industrial Aspects of Rheology', Contact: Dr N.E.Hudson, Dept of Pure & Applied Chemistry, University of Strathclyde, 295 Cathedral St., Glasgow, G1 1XL. Tel: 041 552 4400 X 2162
4-7/9/95	Aberystwyth, Wales	'Polymer Melt Rheology', Contact: Prof K.Walters, Dept.of Mathematics, University of Wales, Aberystwyth, SY23 3BZ
6-8/9/95	Paris, France	'Gels', Contact: Dr J.W.Goodwin, School of Chemistry, University of Bristol, Cantocks Close, Bristol, BS8 1TS
19-22/9/95	Leeds, UK	'First European Coating Symposium', Contact: Dept of Chemical Engineering, University of Leeds, LS2 9JT
1995	Caracas, Venezuela	'3rd Caribbean Conference on Fluid Dynamics', Contact: Dr H.Ramkissoon, University of the West Indies, Dept of Mathematics, St Augustine, Republic of Trinidad and Tobago.
18-23/8/95	Quebec City, Canada	'XIth International Congress on Rheology', Canadian Rheology Group / Groupe Canadien de Rhéologie, Contact: Prof. D.DeKee, Dept of Chemical Engineering, University of Sherbrooke, Sherbrooke, Québec, J1K 2R1. Canada

Travel grants are available to help students attend any of these meetings.

RECENTLY PUBLISHED BOOKS

Information on recent books is given here for the benefit of members, but the Society cannot answer queries about the availability of particular titles. Place orders for books with publishers through booksellers and agents. The summaries are based on those of the publishers. The editor takes no responsibility for their accuracy.

Techniques in Rheological Measurement, Editor: A.A.Collyer, Chapman & Hall, Sept 1993, pp360, ISBN 0-412-53490-8, £65. Provides an excellent introduction to the rapidly changing face of rheological measurement, with particular regard to process control. New and more sophisticated techniques of rheological measurement have evolved as a result of advances in the understanding of rheological principles and improvements in computer control. This book increases awareness of the greater variety of techniques currently available for understanding the way in which fluids behave during processing.

Polymer Rheology, Y.G.Yanovsky, Russia, Chapman & Hall, Sept 1993, pp320, ISBN 0-412-53460-6, £69. This book presents a comprehensive discussion of the various aspects of both theoretical and applied rheology. Attention is focused on those aspects that are most important today, namely the general laws of rheological behaviour of composite systems, including blends of polymers, copolymers and filled compositions. It is the structural features of these systems that ensure their useful properties as materials intended for engineering purposes. Although this work is not conceived as a textbook, it will be an excellent aid for senior undergraduates and postgraduates with an interest in polymer rheology. It is accessible to both the experienced worker and the beginner, and it will be invaluable to those in the field of the mechanics of non-Newtonian liquids and to specialists in the production and processing of polymer materials.

Nonlinear Phenomena in Flows of Viscoelastic Polymer Fluids, A.I.Leonov, USA & A.N.Prokunin, Russia , Chapman & Hall, March 1994, pp486, ISBN 0-412-58200-7, £89. This book presents detailed studies of flows in elastic liquids, from theory, through experiment, to applications. Experimental methods, experimental device schemes, principal rheological effects and dependencies are considered, as are the constitutive equations consistent with thermodynamics which are able to describe experimental data, and the methods of evaluation of rheological parameters within these equations. Numerous comparisons are made between predictions and experimental data that demonstrate which properties of the constitutive equations are particularly related to one or other effect. Applications of results to industrial problems are also discussed. This book will be of interest to those working in research and development in the field of polymer processing, as well as in the food and oil industries.

Viscoelasticity of Engineering Materials, Y.M.Haddad, Canada, Chapman & Hall, Dec 1994, pp360, ISBN 0-412-59030-1, £59. This book provides a unified, comprehensive presentation of the foundations of the theory of viscoelastic solids. The large subject area is separated into self-contained chapters that give a full complete picture and allow a thorough understanding of the current status and future direction of individual topics. The author emphasises the basic principles along with topics of fundamental importance to the understanding of viscoelasticity in its different regimes. Particular attention is paid to experimental activity, numerical characterization of the response of advanced industrial materials and the solution of the associated boundary value problem. This book claims to be a complete reference for scientists and engineers who are involved in the production and processing of viscoelastic materials, dealing with the subject in a unified and comprehensive manner and in a clear and easy to understand format.

Coulson & Richardson's 'Chemical Engineering, Vol 3, Chemical & Biochemical Reactors & Process Control, Third Edition. Editors: J.F.Richardson, Swansea & D.G.Peacock, London. Elsevier Science Ltd, Sept 1994, , ISBN 0-08-041002-2, £83, Hardback. ISBN 0-08-041003-0, £28.50, Paperback. This book covers reaction engineering (both chemical and biochemical), together with measurement and process control. In the new edition, the material on chemical reactor design has been rearranged into four chapters. The first covers general principles, the second, flow characteristics and modelling in reactors. Chapter 3 now includes material on catalytic reactions together with non-catalytic gas-solids reactions and Chapter 4 covers other multiphase reactor systems. The first of two sections on biochemical engineering deals with the nature of reaction processes controlled by micro-organisms and enzymes mechanisms. The second deals with the process engineering principles of biochemical reactors with emphasis on the differentiation from chemical reactors. A new chapter on Measurement describes the various in-line techniques for measurement of the process variables required for plant control systems. The chapter on process control gives an updated treatment of the principles, together with a discussion of computer control. The book is suitable for students and professors in chemical engineering and is suitable for course adoption.

The Structure and Properties of Polymeric Materials, 1993, D.W.Clegg & A.A.Collyer, The Institute of Materials, London, pp292, ISBN 0-904357-98-8, £83, Hardback. Presents the basic principles underlying the properties of polymeric materials. Contents: the nature of polymeric materials; polymer blends and composites;the viscoelastic nature of polymers; the rheology of polymer melts; the effects of process variables and molecular architecture on the rheological properties; extruder and extruder-based processes; injection moulding processes; joining with polymers; designing with plastics; index.

MEMBERSHIP NEWS

The following applications for membership were approved at the Council meeting, September 22nd, 1994

Mr A. Baloch,
Computer Science Department,
University of Wales, Swansea,
Singleton Park,
Swansea, SA2 8PP
(fetsa BDFGJLM)

Dr S.Blackburn,
IRC in Materials for
High Performance,
The University of Birmingham,
Birmingham, B15 2TT
(pea BHIL)

Mr M.Finch,
6 Livingstone Circus,
Gillingham,
Kent, ME7 4HA
(feta EFGJJKLMN)

Mr D.Hair,
Polifin - Plastics Technical Centre,
P.O.Box 72,
2 Pinelands Road,
Modderfontein 1645,
South Africa
(fetsa BCD)

Mr A.Karlsson,
Surface Coatings Laboratory,
AB Volvo Technological
Development Dept 06350 TGS2
405 08 Göteborg
Sweden
(feta FGJO)

Ms R.Kelly,
ABFS (Food Science),
University of Nottingham,
Sutton Bonington,
Loughborough, LE12 5RD
(fetsa GL)

Mrs M.Kurling,
Surface Coatings Laboratory,
AB Volvo Technological
Development Dept 06340 TGS1
405 08 Göteborg
Sweden
(feta FGJO)

Mr J.Maia,
Dept of Mathematics,
University of Wales, Aberystwyth,
Dyfed, SY23 3BZ
(fetsa CDGJN)

Dr A.Merrington
Michigan Molecular Institute,
1910 West St Andrews Road,
Midland,
Michigan 48640-2696 - USA
(fetsa CDGH)

Miss D.Nistoran,
University 'Politehnica' Bucharest,
Hydraulics Dept, Energetics Faculty,
313 Spl. Independentei, Sector 6,
77 206, Bucharest
Roumania
(fetsa DJL)

M.G.Papaevangelou,
Laboratoire de Rhéologie,
BP53X, Domaine Universitaire,
38041 Grenoble, Cedex 9,
France
(fetsa DGK)

Dr C.J.Shaw,
Smith & Nephew Medical Ltd.,
P.O.Box 81,
Hessle Road,
Hull, HU3 2BN
(fetsa DFGJ)

Dr J.B.A.F.Smeulders,
Dept of Chemical Engineering,
University of Cambridge,
Pembroke Street,
Cambridge, CB2 3RA
(fetsa DFGLM)

Miss K-M.To,
ABFS (Food Science),
University of Nottingham,
Sutton Bonington,
Loughborough, LE12 5RD
(fetsa L)

Prof N.Venneman,
Fachhochschule Osnabrück,
Fachbereich Werkstofftechnik,
Albrechtstr. 30,
49076 Osnabrück,
Germany
(fetsa BCDO)

Mme P.Vlachou,
Laboratoire de Rhéologie,
BP53X, Domaine Universitaire,
38041 Grenoble, Cedex 9,
France

The following members were nominated for Honorary membership of the BSR at the meeting of the Council in June 1994:

Mr Jack Astin, Prof Marcel Crochet, Prof J.W.S.Hearle, Dr J.M.Hobbs, Prof A.B.Metzner, Mr Trevor Strivens.

The following resignations have been received:

Prof P. Georakopoulos. Dr M.J.Groves. Dr A.Mackie



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